

A Ripple-Trac Case Study

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Today's Information Technology Departments are searching for solutions that will give them a competitive edge and address critical business issues such as reducing costs and increasing efficiency. Organizations with rapid growth often find that transaction expansion causes an obstacle somewhere in the information processing environment.

Such was the case with a very large investment firm which is required to provide both retail and institutional customers with sub 2 second response times per trade. The Client has a massive Automated Trading System which runs on the mainframe and non-mainframe environments. The impact of large volume trades in a short period of time can degrade the application's performance quickly. Thus the most critical sub-application at this Client is the Orders Processing System. A backend system which is housed on an IBM computing sysplex, running under CICS with large volumes of VSAM databases.

The need to handle millions of transactions in a single 24-hour period can place a great strain on IT Management, Systems Administrators, Programmers, Systems Support Staff and DASD Management. Online Systems which update large volumes of databases create massive DASD problems and wreak havoc on response times for customers. With in-house talent bewildered on how to solve all these problems this Financial Client turned to Consultants at Logic Online, a Northeast based boutique company that was already under contract for a legacy modernization project.

The technology used by Logic Online, Ripple-Trac, finds its greatest benefit in helping z/OS organizations distinguish high from low-leverage features or behaviors (concerns) in highly complex systems. In effect, this technology lies in seeing through complexity to the underlying structures and relationships.

Ripple-Trac organizes the complexity into a coherent story that illuminates the concerns/patterns and how the concerns/patterns can be decomposed into manageable and comprehensive parts without investing in new hardware or software.

Logic Online uses Ripple-Trac because it follows the separation of concerns theory (MDSOC), it presents the information from the point of view of the concern/pattern. The uniqueness of this approach is the targeted approach, which has the potential to support longer term refactoring of performance issues into highly tuned components and services.

Logic Online began the assignment to analyze the transformation of one sysplex to another. After a few weeks Logic Online was asked to help with VSAM RLS (Record Level Sharing) and CICS performance issues.

The Client management asked to find a way to discover all performance issues related to CICS RLS without interfering with production cycles. After some analysis, Logic Online knew that Ripple-Trac would be beneficial to this endeavor. Management was approached about using Ripple-Trac. After seeing a brief Proof-of-Concept, the Client agreed to forge ahead and provided the necessary system support to install Ripple-Trac onto their system.

The Client found the install to be simple and easy as it took less than one-hour of a system programmers time.

The Problem

Once Ripple-Trac, was installed the Consultants found that most performance problems were caused by unanticipated events and old complex run-time component interactions, not bugs.

The Solution

With over 35,000 VSAM files, Ripple-Trac was able to isolate the VSAM issues by business users. By using Ripple-Trac, the basic design issues were easily understood so that the technologists had a roadmap to consider the appropriate changes.

A predefined set of RLS VSAM files were selected for the first iteration (70 files). One file in particular was causing many performance problems. The result set from Ripple-Trac indicated the appropriate changes to be made. Once the new changes were installed, a reduction of 25% CPU time was achieved.

This set the stage for continuing the analysis to discover and suggest modified parameters.

Another area of concern was found by using Ripple-Trac. The methodology of how secondary allocation of disk space was requested by DASD was a concern. The Logic Online team found that when secondary allocation occurred the VSAM catalog had to be accessed, thus taking up extra CPU cycles. The Logic Online Project Lead explained to the Client's tech team that when a CA split occurs at the same time as a secondary allocation request, the system now had a compounded cycle issue.

A timeline was set over 5 business days to see when secondary allocations took place and to what magnitude. At the end of the 5 days, the Client could see that the primary allocation for the file was not adequate and by adding all the secondary allocations this resulted in the correct change to primary allocation.

The Client learned that when Files grew, they fill their primary space and created large amounts of secondary space via an EXTENT. This was happening to both the DATA and the INDEX portion of a VSAM File. When the additional Extents were read, it took additional I/O, CPU, and EXCPS to find and move to the next EXTENT. This was because the program reading the file had to go to the CATALOG to find the address of the next EXTENT, even if it was contiguous. This became much worse when the program is reading the file RANDOMLY.

The Client can now meet its response time goals. By meeting the agreed upon SLAs to Business Management and its customers this Client is able to expand its business. At the same time, it has reduced the cost of running their Trading System. Additionally, the Client can now delay any planned sequence of CPU upgrades. DASD space is used more efficiently, I/O reduced, CYCLES reduced, and EXCPS reduced. IT Management is now meeting their business objectives.

Ripple-Trac was proven to meet the need effectively. Any company will successfully meet its goals of high performance processing, stability, ease of maintenance and administration support with Ripple-Trac.